Setting TNC Policies to Increase Sustainability

March 2021

A White Paper from the National Center for Sustainable Transportation

Sam Fuller, University of California, Davis

Tatjana Kunz, University of California, Davis

Austin L. Brown, University of California, Davis

Mollie C. D'Agostino, University of California, Davis

National Center for Sustainable Transportation

ITS UC DAVIS INSTITUTE OF TRANSPORTATION STUDIES

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
NCST-UCD-WP-21-02	N/A	N/A

4. Title and Subtitle	5. Report Date
Setting TNC Policies to Increase Sustainability	March 2021
	6. Performing Organization Code
	N/A

7. Author(s)	8. Performing Organization Report No.
Sam Fuller, https://orcid.org/0000-0002-9670-1092 Tatjana Kunz, https://orcid.org/0000-0002-9894-5170 Austin L Brown, PhD, https://orcid.org/0000-0002-5454-1465 Mollie C D'Agostino, https://orcid.org/0000-0002-3689-9471	UCD-ITS-RR-20-64

9. Performing Organization Name and Address	10. Work Unit No.
University of California, Davis, Institute of Transportation Studies, 1605 Tilia Street, Suite 100 Davis, CA 95616	N/A **11. Contract or Grant No.** USDOT Grant 69A3551747114

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
U.S. Department of Transportation Office of the Assistant Secretary for Research and Technology 1200 New Jersey Avenue, SE, Washington, DC 20590	Final Report (October 2019 – July 2020) **14. Sponsoring Agency Code** USDOT OST-R

15. Supplementary Notes

DOI: https://doi.org/10.7922/G2SJ1HW6
Dataset DOI: https://doi.org/10.25338/B82D07

16. Abstract

Cities and states across the U.S. are assessing fees or taxes on transportation network company (TNC) platforms, such as Uber and Lyft. The goals of these policies include traffic and emissions mitigation, as well as revenue generation, among other objectives. This research aims to assess the goals and effectiveness of these fees in achieving some of these policy objectives, primarily congestion and emissions mitigation. The analysis addresses a core difficulty in comparing TNC fees—some fees are assessed per mile and others per trip. The researchers compared 21 fees implemented by state and local governments across the United States and apply a methodology to compare these diverse fees and taxes based on a hypothetical ride informed by Uber's fare calculator, as well as other sources. The findings show that when adjusted for comparison, the highest fees, by a wide margin, are assessed in downtown New York City and Chicago (during peak hours). A key policy implication of this research is that most fees or taxes are not large enough to affect enough travelers' choices to hail a TNC, and most do not differentiate between solo and pooled/shared rides. Only San Francisco, Chicago, New York City, and New Jersey differentiate between solo and shared rides, which is likely to influence travelers in choosing to share a ride. This is problematic given that increasing passengers per vehicle mile traveled is an essential strategy in managing congestion and reducing emissions associated with all vehicle travel, including TNCs.

17. Key Words	18. Distribution Statement
Pooling, Transportation Network Companies, Sustainability, Emissions, Congestion	No restrictions.

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	37	N/A

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

About the National Center for Sustainable Transportation

The National Center for Sustainable Transportation is a consortium of leading universities committed to advancing an environmentally sustainable transportation system through cutting-edge research, direct policy engagement, and education of our future leaders. Consortium members include: University of California, Davis; University of California, Riverside; University of Southern California; California State University, Long Beach; Georgia Institute of Technology; and University of Vermont. More information can be found at: ncst.ucdavis.edu.

Disclaimer

Acknowledgments

This study was funded, partially or entirely, by a grant from the National Center for Sustainable Transportation (NCST), supported by the U.S. Department of Transportation (USDOT) through the University Transportation Centers program. The authors would like to thank the NCST and the USDOT for their support of university-based research in transportation, and especially for the funding provided in support of this project. The authors would like to thank the UC Davis 3 Revolutions Future Mobility Program and Policy Initiative for discussions that shaped the direction of this study. Thank you to the reviews and feedback provided by the California Public Utilities Commission and the San Francisco County Transportation Authority on the draft of this paper.

Author Contributions

The authors confirm contribution to the paper as follows: study conception and design: Austin Brown; data collection: Sam Fuller; analysis and interpretation of results: Sam Fuller, Tatjana Kunz; draft manuscript preparation: Sam Fuller, Austin Brown, Tatjana Kunz. All authors reviewed the results and approved the final version of the manuscript.

Setting TNC Policies to Increase Sustainability

A National Center for Sustainable Transportation White Paper

March 2021

Sam Fuller, Department of Political Science, University of California, Davis

Tatjana Kunz, Policy Institute for Energy, Environment, and the Economy, University of California, Davis

Austin L. Brown, Policy Institute for Energy, Environment, and the Economy, University of California, Davis

Mollie C. D'Agostino, 3 Revolutions Future Mobility Program, University of California, Davis

NCST

[page intentionally left blank]

NCST

TABLE OF CONTENTS

EXECUTIVE SUMMARY iv
Introduction 1
Transportation Network Companies Policy Landscape 2
Overview of Current Practices 6
Methodology 8
Normalized Price Comparisons between Existing Programs 11
Policy Analysis and Recommendations 12
Conclusion 21
References 22
Data Management 25
APPENDIX: Detailed Links/Citations of Stated Fee Purposes 26

List of Tables

Table 1. Cities and States' Stated Goals/Earmarks of TNC Fees across the United States............ 4
Table 2. State and Major City TNC fees across the United States 6
Table 3. Cost-Comparison Model Assumptions.. 8
Table 4. TNC Fee Revenue by State/City 12
Table 5. Average TNC Taxes as a Percentage of Total Trip Cost. 15
Table A1. List of Fees and Stated Purpose/Goal.. 26

List of Figures

Figure 1. TNC Fees Across the United States by Type of Fee (Solo vs. Pooled) 11
Figure 2. Per-Mile Tax Cost by Type of Trip and City/Sate 14
Figure 3. Fees as a Percentage of Total Ride Cost by Ride Type and City/State 17
Figure 4. Cost Differences in Solo vs. Pooled Rides Per-Capita and Total 3-Person Cost............ 20

Setting TNC Policies to Increase Sustainability

EXECUTIVE SUMMARY

Transportation Network Companies (TNCs) have grown rapidly into a major player in transportation in cities across the United States and the world. While often providing a cheaper and more flexible option than traditional taxi services, TNCs' growth has been linked to increased congestion and emissions. Recent studies have found evidence of these effects, finding significant increases in congestion in more densely populated places like New York City and San Francisco (*1–2, 11*).

Cities and states across the U.S. are regulating TNCs in an effort to address these concerns. Most of these regulations are simply taxes and fees on the operation of the vehicle, assessed per ride at a flat or percentage rate. These fees are aimed at addressing various problems. According to Supervisor Aaron Peskin describing San Francisco's TNC fees, "The goals are very simple. This is a traffic congestion mitigation tax" (*28*).

However, the full story is more complex. TNC fees are intended not only to disincentivize congestive trips (namely solo rides) but they also have other objectives, such as emissions reductions or revenue generation (see Table 1 and 2 in the main text for a full overview of objectives). Our research looks at TNC fees in 21 cities and finds that most of the fees may not be effective in achieving congestion mitigation or related emissions goals. This may be linked in part to the fact that most fees or taxes are not large enough to affect behavior, and most do not differentiate between solo and pooled/shared rides. This is problematic given that, increasing passengers per vehicle mile traveled is an essential strategy in managing congestion and reducing emissions associated with all vehicle travel, including TNCs.

Our research fills a gap in the literature surrounding TNC fees. The analysis builds on a list of these fees and taxes compiled by the Eno Center for Transportation (*29*) and aims to address the difficulty in comparing these fees given that various fees are assessed per mile and others per trip. We compare 21 fees implemented by state and local governments across the United States. To further our understanding of the differences between these fees across states and localities, and to be able to better compare fare-percentage and per-ride fees, we propose a methodology to compare fees based on a hypothetical ride.

Our results reflect an exercise that compares a solo and shared ride in each of the cities studied—informed by Uber's fare calculator, as well as other sources. The baseline for comparison is a 5-mile trip with a $10 solo fare and $5 shared fare. This simplified trip enables us to better compare fees across cities and to assess what proportion of total fare cost the fees comprise. Most total fees are less than 10% of the cost of the trip. Furthermore, our results suggest that these fees are much too small to influence travel behavior and often over-penalize pooling, especially fees that do not differentiate between solo and shared rides. When fees for a shared ride are summed for a full vehicle (3 riders plus fees) they dwarf those assessed on solo rides. See Figure 2 and Figure 3 in the main text for more information.

Our findings show that the highest fees, by a wide margin, are assessed in downtown Manhattan and Chicago (during peak hours). Only four fees (San Francisco, Chicago, New York City, and New Jersey) differentiate between solo and shared rides. Though, it is important to note, these four markets are some of the largest in the U.S.

To better achieve the public goals of reducing congestion and decreasing emissions, we propose the following policy recommendations with respect to TNC regulations:

1) **Assess TNC fees and incentives at a level large enough to influence behavior.** TNC fees as they exist now are too small to influence travel behavior and overtax pooled/shared rides, especially those without differentiation between solo and pooled.
2) **Assess solo-occupant TNC fees at a far greater level than pooled fees such that they can be used to further incentivize pooling**. Fees on solo rides could be used to directly subsidize shared rides. For example, regulators could impose a $2.50 fee on solo rides and subsidizes shared rides by providing a $2.50 discount.
3) **Consider alternative mechanisms that minimize deadheading**. TNC fees do nothing to address a large component of TNC miles—time spent driving between vehicle pick-ups and drop-offs, known as *deadheading.* This practice can be a large contributing factor to increased traffic and emissions, and state and local strategies to inhibit excessive deadheading may be advisable.
4) **Consider alternatives that directly price all personal vehicle travel.** Taxes or fees work best when they apply to a full travel market, such as a comprehensive congestion fee zone, or a low-emission zone. Private auto travel remains the primary contributor to congestion and emissions in transportation in U.S. metro areas.

There is considerable room for governments to implement policies that mitigate the congestion or emissions impacts of TNCs. Lawmakers should be cognizant that policies that excessively tax TNCs may encourage personal vehicle travel, and more comprehensive congestion pricing policies would lead to larger emissions and congestion benefits, than targeting fees or taxes at TNCs alone. This paper aims to provide a launching board for future research to deeply assess the potential outcomes of these policies. We propose a methodology for comparing TNC fees and identify hypothetical policies for increasing pooled/shared rides while reducing solo rides and potentially personal vehicle travel.

Introduction

Personal mobility in vehicles is underpriced compared to the external costs of the activity. However, determining how to price, and at what amount, personal vehicle travel (PVT) is difficult, and implementing it is even harder, as evidenced by the challenges of even such simple proposals as indexing fuel taxes to inflation. In order to decrease emissions and congestion, many cities and states have promoted the use of electric vehicles (EVs) and shared rides (such as from carpooling).

More recently, 21 governments (including 9 cities and 12 states) have begun to price and regulate Transportation Network Companies (TNCs) like Uber and Lyft. This is a logical consequence of their similarity to taxi services (which have been taxed and regulated for the past century) and their noted effects on congestion in some locations, such as San Francisco and New York City (*1*–*2*). Among these 21 initial attempts at TNC fees and regulations, most governments have a stated purpose to decrease/control congestion. But while this is a well-intentioned goal, most of these policies are poorly structured at achieving this goal for numerous reasons. First, most of these policies in the United States (U.S.), with the exception of New York City (NYC), San Francisco, New Jersey, and Chicago, do not differentiate fees for pooled/shared rides and instead tax any ride equally regardless of passenger quantity. It is well understood that pooling has the capability of reducing congestion and emissions (*3*), and thus should be considered when setting fees for TNC rides.

Second, there are no exceptions or incentives for electric vehicles, despite many of these states/cities implementing other policies aimed at increasing EV usage. Although not the focus of this paper, there exist many options for incentivizing increased adoption of EVs in TNC fleets, see Slowik, Wappelhorst, and Lutsey (*4*) for a detailed discussion.

Third, increasing costs of alternative modes of transportation (e.g., increases in bus/metro fares or increased taxes on TNCs) indirectly incentivizes PVT, which contributes the most to congestion and emissions and the continued car dependence of cities. While increased fees for TNCs could possibly lead to individuals substituting towards public transit, TNCs can be used for first & last-mile transportation (this is especially the case in cities with agreements/partnerships with TNCs) or in areas with poor public transit options, meaning that most of the substitution would be towards personal vehicle travel (*5*).

Fourth, these policies do not directly address deadheading (travel by the TNC driver with no rider), which is a major reason for any increased congestion due to TNCs (*6*). Finally, as we show in this paper, most fees are likely not high enough to cause significant changes in behavior, simply because they comprise such a low percentage of the cost of transportation (with perhaps the exception of NYC and Chicago). This last point, however, is not a recommendation for increasing fees on TNCs overall, without an increase for PVT (because every fee on an alternative is effectively an incentive for people to drive themselves alone).

Pricing TNC usage correctly is increasingly important for two major reasons:

1) TNCs are a new and rapidly growing form of mobility (*7*), and how they are priced and regulated now is likely to influence any future policy changes in TNCs and in related new mobility services (e.g., automated vehicles, e-scooters, etc.). Furthermore, TNCs are expected to continue to grow and occupy more and more of the personal mobility space (*7*). Thus, if poor policies are implemented now, it could lead to significant increases in congestion and make it more difficult to implement effective strategies later.
2) There is a great opportunity with TNC regulation to incentivize good travel behavior, e.g., EV adoption, greater amounts of carpooling, decreased personal vehicle ownership, while sending a price signal that single-occupancy vehicle (SOV) travel in gas-powered vehicles is the most societally harmful.

Pooling will be unlikely to capture significant market share if the price is not dramatically lower than solo travel, especially because pooled rides tend to take longer, and the effective cost of time from the extra travel is significant (*8*). Incentivizing pooled rides, disincentivizing deadheading, and incentivizing the adoption or use of EVs as TNCs would together make a significant difference in governments' interrelated goals of reducing congestion and emissions. Clearly, given these considerations, it is fundamentally important to make these policies as effective as possible in incentivizing shared/pooled travel, while directly disincentivizing deadheading, with the goal to decrease PVT, especially single occupancy travel. As it stands, the patchwork of transportation pricing systems implemented across the country fail to accomplish these two goals.

In this paper we first lay out the pressing concerns that many cities have about congestion and TNCs. Second, we survey the current state of fees, both state and local, across the United States. Third, we describe our methodology that enables the comparison disparate types of fees (e.g., per-ride versus percentage fees). Finally, we examine and compare the fees and propose a new cross-subsidy system that would better accomplish the interrelated goals of reducing congestion and emissions than what has recently been implemented.

Transportation Network Companies Policy Landscape

A major concern for governments across the U.S. is that transportation has been a rising source of greenhouse gas (GHG) emissions. In response to this growing problem, governments have been considering and implementing transportation policies aimed directly at reducing greenhouse gases and criteria pollutants in cities. In order for these policies to succeed, they must either decrease overall vehicle-miles-traveled (VMT) and/or convert the remaining VMT to electric-VMT. A related problem is congestion, which increases emissions by increasing travel times and vehicle idling. With both increasing congestion (*9*) and little progress on reducing GHG emissions plaguing cities across the U.S. (*10*), answers to both what is causing the congestion and, consequently, how to manage it, are in high demand.

TNCs are often pointed towards as a key cause of increased congestion. Research has confirmed that TNCs are a partial cause of increased congestion alongside other significant influences like population and job growth. TNCs have been found to both increase and decrease transit ridership (*12–14)*. TNCs are also associated with increased travel and congestion associated with "deadheading" (cruising for rides without a passenger), and increased overall greenhouse gas emissions (*2, 6*). Evidence suggests that the negative outcomes from TNCs are still small when compared to the primary contributor to congestion and emissions: Personal Vehicle Travel, especially people driving alone. For example, the Massachusetts Department of Transportation found that TNCs constituted only 4% of the congestion/traffic in the state as a whole (*15*). However, TNCs do have larger overall impacts in dense, urban areas where there are more TNC vehicles, for example a robust study of San Francisco showed TNCs could be correlated with a 50% increase in congestion in San Francisco (*1–2, 11*).

Given the role they play in encouraging congestion, taxing TNCs could in principle address a part of the congestion problem. This approach has been shown to be politically feasible, where taxing PVT has been politically challenging. However, it is critical to underscore that the vast majority of traffic and congestion is caused by SOVs and it is important to contextualize how TNCs' congestion impacts are influenced by policy and regulation. A reduction in or even elimination of TNC use would not solve traffic or emissions problems, and if TNCs are better utilized in the future (either as a result of technology, regulation, or both) they could help mitigate emissions by increasing pooling and decreasing car dependence. For example, if regulations were able to address all deadheading, they could reduce TNC VMT by (at the lower bound) ~41% based on Henao & Marshall's findings (*6*).

In summary, TNC usage is not inherently negative for emissions or congestion, but instead TNCs are operating in a regulatory system that does not effectively price societal harms. This policy system a) does not tax or disincentivize deadheading b) does not incentivize pooled rides and c) does not incentivize EV use or adoption among TNC drivers. In truth, under a different regulatory regime that directly targets the negative effects of TNCs, their use could instead be channeled to provide benefits to users, such as ease of use and lower costs when compared to PVT, and minimize societal costs, namely increased congestion and emissions.

It should be noted, however, that one of the best solutions for significantly reducing congestion is the use of holistic congestion pricing. Its effectiveness is a consequence of charging *all* traffic, including the number one contributor to congestion, SOVs. London is a prime example of the success of this kind of pricing, with a 30% reduction in congestion, an increase in average speed of 30%, and better travel-time reliability since congestion pricing was implemented in 2004 (*16*). Overall, congestion pricing typically results in increased transit ridership, decreased congestion through fewer SOV and solo trips, and an increase in shared/pooled trips or usage of public transit. Importantly, this policy does not only apply solely to TNCs but to all vehicles, thus reducing the primary contributor to congestion and GHGs: personal vehicle travel. New York has begun to implement a congestion charge, which will first target TNCs in the lower Manhattan cordon, with plans to expand to charge all vehicles, once they gain approval from federal regulators (*17*). Other U.S. cities are also considering comprehensive congestion pricing in their busiest and most congested areas, including San Francisco, and Los Angeles (*18*).

However, implementing congestion pricing is not only difficult in planning and funding the system (e.g., the city must increase funding for transit commensurately) but also politically, given that most individuals are very opposed to congestion pricing (though in London and Stockholm the popularity increased dramatically after implementation (*19*)). Given this difficulty and the impact that TNCs are having today, it is important to consider alternative policies, like fees that directly target TNCs.

TNC fees have various stated purposes and specific earmarks, presented in Table 1, ranging from program administration, to reducing congestion and funding transit systems, and even public-school funding. Many are also primarily revenue generators and contribute directly into general funds. Given the widespread and growing use of these fees across the U.S., and their often-stated aim of reducing congestion and emissions, it is important to survey the state of these fees across the country, compare approaches, and evaluate their design compared to the stated aims. Above and beyond stated purposes, we aim to provide recommendations focused on reducing congestion and consequent GHG emissions.

Table 1. Cities and States' Stated Goals/Earmarks of TNC Fees across the United States.

State	City	Stated Purpose and/or Earmarks of Fee	Source
AL		Cover costs of regulation through the Public Service Commission. Raise revenue for local municipalities.	AL.com
CA		Fund the "TNC Access for All Fund" which is then disbursed to TNCs to implement services that increase access for disabled persons.	California State Legislature Archive (legislature.ca.gov) California Public Utilities Commission (CPUC)
CA	San Francisco	"The goals are very simple. This is a traffic congestion mitigation tax."—Supervisor Aaron Peskin	SFExaminer.com
CT		No found purpose, goes to general fund.	Eno Brief: Taxing New Mobility
DC	Washington, DC	D.C. council members argued that TNCs "contribute to traffic congestion, add wear and tear to the District's roads, and there is evidence that they draw people away from public transit."	Washington Post
HI		General excise tax, no intended purpose.	Hawaii state government archive
IL	Chicago	New increase is aimed at decreasing congestion and incentivizing pooling. ~$2 million of expected revenue is earmarked for transit.	Chicago.gov Chi.streetsblog.org

State	City	Stated Purpose and/or Earmarks of Fee	Source
LA	New Orleans	For funding regulation and enforcement of TNCs.	Nola.gov
MA		Earmarked for transportation. New proposed fee would also be earmarked for MBTA. (70% to MBTA, 30% to local towns)	Mass.gov
MD	Baltimore	If assessed, must be used to increase local transportation funding.	Maryland.gov
NJ		Not earmarked, no stated purpose.	NJ.gov
NV		$5 million to highway fund per 2-year period, above that goes into general fund.	Nevada State Legislature Archive
NY	Outside NYC	4% Not earmarked for transportation, goes to general fund. 2.5% earmarked for the black car fund.	New York Times New York Black Car Fund
NY	Within NYC	Decrease congestion. Earmarking unknown.	New York Times
OR	Portland	Earmarked for regulation, safety, accessibility and other TNC related programs.	PortlandOregon.gov
PA	Philadelphia	Raise money for public schools and the regulation of TNCs	Philadelphia Business Journal
RI		Not earmarked, goes to general fund.	Tax.RI.gov
SC		Not earmarked, no stated purpose.	South Carolina State Legislature Archives
SD		Not earmarked, goes to general fund.	Argus Leader Newspaper
WA	Seattle	$.14 for regulation and enforcement, $.10 for accessibility fund. Additional revenue from $.51 increase will go to affordable housing and a streetcar system. Some will also go to a "Driver Resolution Center"	Seattle.gov KIRO 7 Seattle
WY		Not earmarked, goes to general fund and local governments.	Wyoming State Legislature Archives

Note: See Table A1 in the Appendix for detailed sources. Empty cells in the city column denote a statewide fee.

While it is not the focus of this paper, these policy questions will become even more important if and when highly automated vehicles become more prevalent in TNCs. If policies are in place that increase personal vehicle ownership and usage and yet do not channel behavior into more shared rides, it is likely that when automated vehicles grow in usage that VMT and congestion will increase dramatically (*20*). Increasing the use of shared modes of transportation and decreasing personal vehicle ownership now will yield both short-term impacts and prepare cities for the future of transportation *(20)*.

Overview of Current Practices

There is a significant amount of research on the effects of different travel pricing strategies aimed at reducing congestion, total vehicle miles traveled (VMT), and emissions. Curb, road, and cordon pricing have all been found effective in achieving these reductions, while not having significant economic effects in surrounding areas (*16*). However, the political viability of implementing these strategies is low across the U.S. Yet, the popularity of road pricing has gradually increased after successful implementation in cities like London and Stockholm (*19*). These strategies tend to be more proportional to an individual's road-use than gas taxes, as the fees are based directly on road use (i.e., MPG influences the relative cost of use from a gas tax). Furthermore, these fees can be adjusted for time of day which allows for the pricing to include the costs from the increased congestion of one more vehicle on the road during surge periods.

However, most cities and states are setting fees on TNCs in lieu of a comprehensive road-pricing scheme. This, as mentioned previously, is due in part to both the research that shows that TNCs are linked to some of the increased congestion, and in part due to the political sentiments that make TNCs a more viable target of taxes than a private driver. The vast majority of fee structures are flat (per-ride) taxes on both solo and pooled rides. Some fee structures, like those in Chicago, NYC, and New Jersey, have differentiated fees/taxes based on whether a ride is pooled/shared or not (e.g., $.50 solo/$.25 pooled in NJ). Furthermore, both Chicago and NYC have cordon pricing that increases the fees for any TNC travel in a given area (namely downtown Chicago and downtown Manhattan). However, the vast majority of TNC fees do not differentiate between solo and shared rides at all. In doing so, cities employing these fee schemes are failing to incentivize pooled rides and instead incentivize shifts to other modes of transit, often an individual's own vehicle.

Table 2. State and Major City TNC fees across the United States

		State Fees/Taxes		City Fees/Taxes	
State	City	Flat Per Trip	Percent Per Trip	Flat Per Trip	Percent Per Trip
AL			1.00%		
CA	San Francisco	$0.10			3.25% (1.50%)
CA		$0.10			
CT		$0.25			
DC	Washington				6.00%

		State Fees/Taxes		City Fees/Taxes	
State	City	Flat Per Trip	Percent Per Trip	Flat Per Trip	Percent Per Trip
HI			4.00%		
IL	Chicago (Downtown)			$3.00	
IL	Chicago (Outside)			$1.25	
LA	New Orleans			$0.50	
MA		$0.20			
MD	Baltimore			$0.25	
NJ		$0.50 ($.25)			
NV			3.00%		
NY	Within NYC		2.50%	$2.75 ($.75)	8.88%
NY	Outside NYC		4.00%		
OR	Portland			$0.50	
PA	Philadelphia				1.40%
RI			7.00%		
SC			1.00%		
SD			4.50%		
WA	Seattle			$0.75	
WY			4.00%		

Note: Pooled fees are in parentheses if cities differentiate. Many cities also have specific, and large, surcharges for trips to specific areas, which are most often airports. For example, Boston has a $3.25 surcharge for any TNC trips to or from Logan International Airport and Chicago has a $5.00 surcharge for any trips to O'Hare or Midway, Navy Pier, and McCormick Place. Empty cells in the city column denote a statewide fee, other empty cells indicate a lack of that kind of fee.

<u>Basic Fee Structures</u>—Fee implementation is categorized by either a flat tax on every ride or a percentage tax of the entire fare. The flat-taxes range from $0.10 in California to $3.00 per ride or $1.25 per rider if pooled in Chicago's downtown zone. The percentage taxes range from 1% in Alabama and South Carolina to a total of 11.38% in NYC, when combining state and city fees. Only San Francisco and NYC have both a combined flat and percentage tax structure, when including State levies.

Pooling—Only NYC, Chicago, New Jersey, and San Francisco have a fee structure that differentiates between shared and private rides, with all others using a flat fee. Though it is important to note that these markets comprise a very large share of the U.S. market for TNCs. Even then, if a shared ride has three or more passengers, the total fee for the entire vehicle is larger than a solo ride. For example, in Downtown Chicago the total tax assessed to a pooled vehicle carrying 3 passengers is $3.75 whereas the solo ride is only assessed $3.00.

Methodology

One contribution of this paper is developing a basic set of assumptions to enable comparing the impact of these fees across the U.S. Given the different kinds of fees (flat, percentage, or both) naively comparing them is not very useful. Thus, we developed some basic assumptions, presented in Table 3, that enable us to better compare the overall impacts that these fees have on the total cost of a ride. The trip length and costs per mile are mainly illustrative in nature but also informed by articles discussing pooled versus solo rides and also Uber's fare calculator (*21–22*). Importantly, these length and cost assumptions can vary within this model but should nevertheless produce similar results to those from our model. The average gas tax is calculated by our data and the average MPG is taken from the Environmental Protection Agency's "Fuel Efficiency Trends." Finally, the private vehicle assumptions (gas tax not included) are taken from AAA's Your Driving Costs publications using a medium sized sedan and 25,000 miles driven a year, the average vehicle and distance travelled from this publication. Including the driving cost in the calculation creates an upper bound estimate for the costs that a driver would actually perceive from PVT given that many costs, such as maintenance and the up-front purchase cost, are often hidden to the driver. Importantly, we are not including other common costs to PVT such as parking, tolls, and vehicle registration as it is out of the scope of this paper to estimate those costs for each city/state. However, we hope that the private vehicle costs included make up for those deficits and still provide an upper-bound estimate for drivers' PVT cost perceptions. Finally, to the best of our knowledge, we also collected, through a review of all 50 states and major U.S. cities, all TNC fees in the U.S. and all states' gas taxes (this was collected from the American Petroleum Institute) to be included in our model (see Table 2 for the TNC fees and the dataset linked in the Data Management section for gas taxes.).

Table 3. Cost-Comparison Model Assumptions

Assumption	Solo Ride	Pooled Ride	Private Vehicle (SOV)
Trip length	5 miles	5 miles	5 miles
Cost per mile	$2.00/mile	$1.00/mile	$0.52/mile
Base trip cost	$10.00	$5.00	$2.60
Fuel Efficiency	24.7 MPG	24.7 MPG	24.7 MPG

Our equations for calculating per mile tax cost and trip cost for all three categories are as follows:

Total Tax and Per Mile Tax

$$T_{Solo} = 10(P_{State} + P_{Local}) + (FS_{State} + FS_{Local}) + \left((G_{State} + G_{Federal}) * \frac{5}{mpg}\right) \quad (1)$$

$$T_{Pooled} = 5(P_{State} + P_{Local}) + (FP_{State} + FP_{Local}) + \left((G_{State} + G_{Federal}) * \frac{5}{mpg}\right) \quad (2)$$

$$T_{PVT} = \left((G_{State} + G_{Federal}) * \frac{5}{mpg}\right) \quad (3)$$

where *T* represents the total tax assessed for the trip; *P* is the percentage TNC fee and is multiplied by our assumed fare of $10; *FS* and *FP* are flat TNC fees for solo and pooled rides, respectively; and *G* is the gas tax and is multiplied the mileage divided by our assumed mpg.

$$TPM_{Solo} = T_{Solo} \div 5 \quad (4)$$

$$TPM_{Pooled} = T_{Pooled} \div 5 \quad (5)$$

$$TPM_{PVT} = T_{PVT} \div 5 \quad (6)$$

where *TPM* represents per-mile-tax.

Total Cost and Per Mile Cost

$$C_{Solo} = T_{Solo} + 10 \quad (7)$$

$$C_{Pooled} = T_{Pooled} + 5 \quad (8)$$

$$C_{PVT} = T_{Solo} + (.52 * 5) \quad (9)$$

where *C* represents the total cost assessed to the rider for the trip, *T* is the total tax cost derived previously, and each is modified by the base cost of the trip or, in the case of PVT, the average cost of driving 5 miles (without gas tax) given our assumptions.

$$CPM_{Solo} = TPM_{Solo} + 2 \quad (10)$$

$$CPM_{Pooled} = TPM_{Pooled} + 1 \quad (11)$$

$$CPM_{PVT} = TPM_{PVT} + .52 \quad (12)$$

where *CPM* represents per-mile-cost which is calculated by adding the per-mile base-cost to *TPM*.

$$VCPM_{Solo} = CPM_{Solo} \quad (13)$$

$$VCPM_{Pooled} = CPM_{Pooled} * 3 \quad (14)$$

$$VCPM_{PVT} = CPM_{PVT} \quad (15)$$

where *VCPM* represents the entire vehicle per-mile-cost which only varies from *CPM* for the pooled ride where it is multiplied by our assumed three riders.

We can thus use *TPM*, *CPM*, and *VCPM* to compare the impact of these fees on a standard ride (5 miles) and to examine how much these taxes/fees impact the total cost of usage. It also allows us to compare the different impacts on pooled and shared rides these fees have.

Normalized Price Comparisons between Existing Programs

Normalizing the values for per-mile cost shows that, for a typical ride, the per-mile TNC fee has a wide range of values. The highest fees are concentrated in NYC and (Downtown) Chicago, $0.80 and $0.63 per mile, respectively (Figure 1). The fees then settle into a range between $0.18 in Seattle to as low as $0.05 in South Carolina.

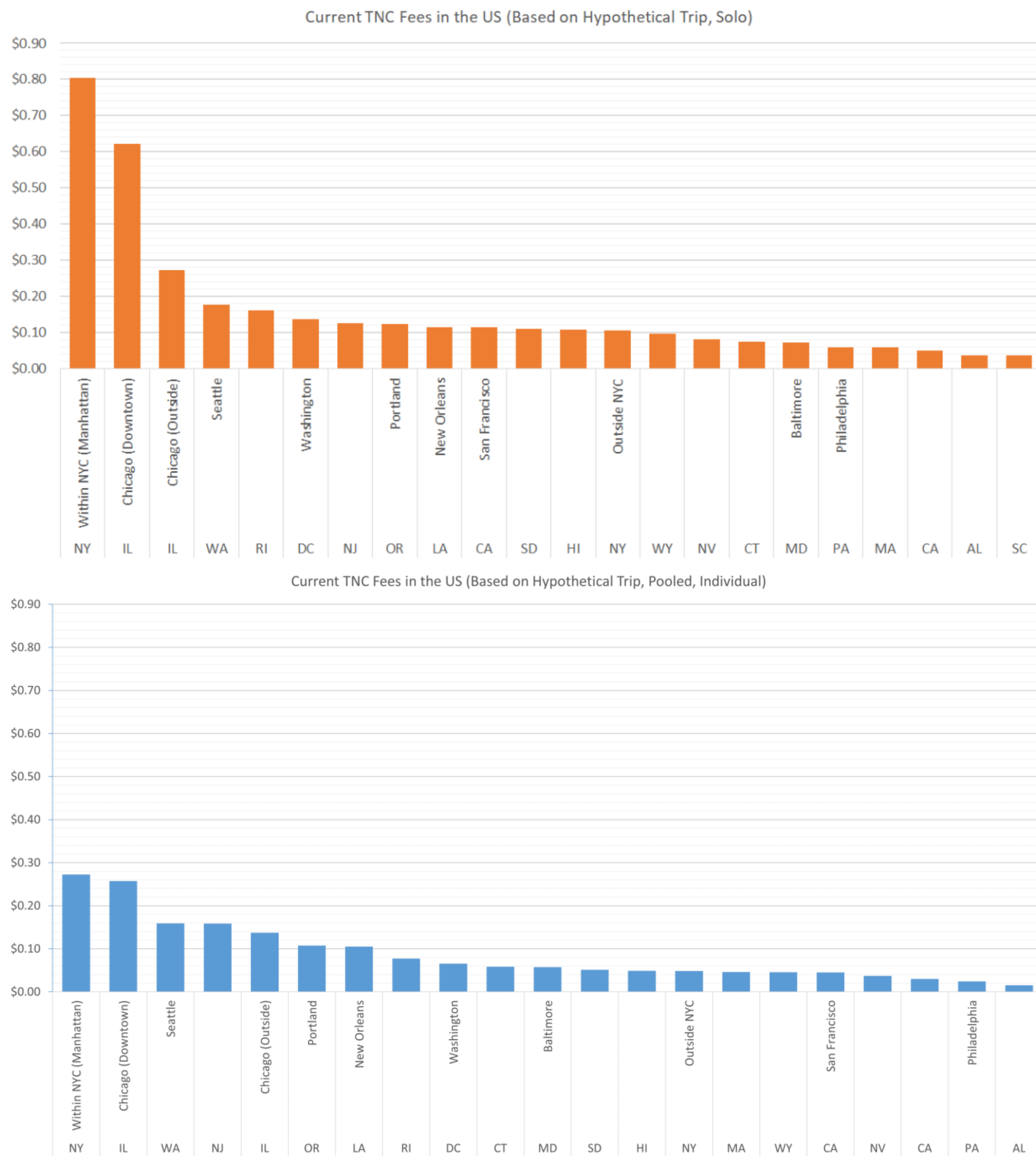


Figure 1. TNC Fees Across the United States by Type of Fee (Solo vs. Pooled)

Policy Analysis and Recommendations

Important to note is that for the purposes of this paper we are assuming that governments implementing these fee structures have congestion and emissions reductions as one of their primary goals. While a significant portion have these goals stated explicitly, many more exist solely to generate revenue while even more have no stated purpose (see Table 4). So, our recommendations in this section revolve around effective strategies to reduce congestion, and consequently emissions, by incentivizing pooling, taxing deadheading, discouraging solo rides, and increasing EV usage among TNC drivers.

Table 4. TNC Fee Revenue by State/City

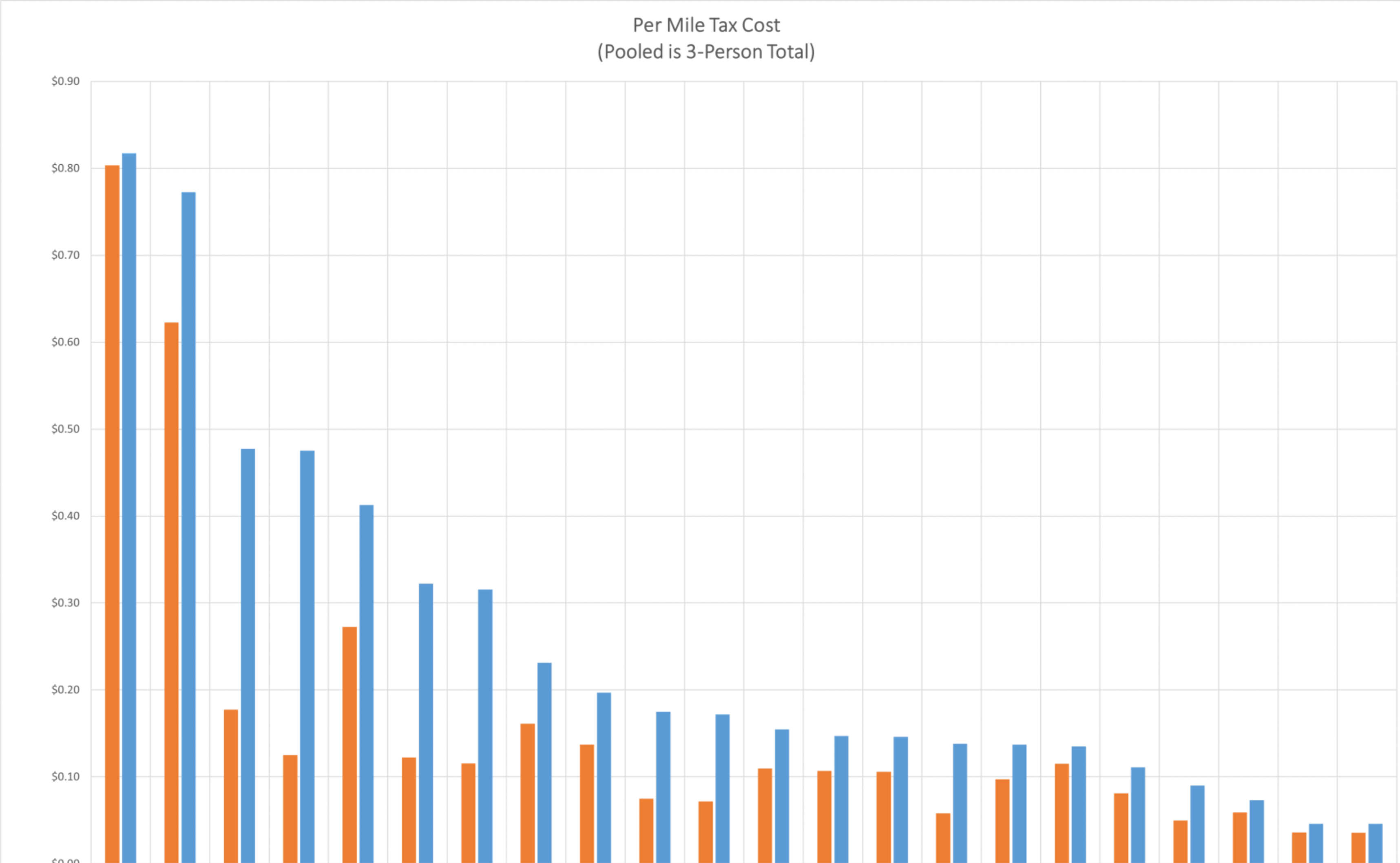
State	City	Revenue	Source
CA		Can't determine.	SFCTA Archive
CA	San Francisco	Anticipated $35 million	sf.curbed.com
DC	Washington, DC	~ $4.83 million in 2018	dfhv.dc.gov
IL	Chicago	~ $98 million in 2018, ~$77 million in 2017	Chicago.gov
MA		~ $16 million in 2018	tnc.sites.digital.mass.gov
MD	Baltimore	Couldn't find any reported revenues from local jurisdictions.	
NJ		~$10.3-$26.8 million in 2019	njleg.state.nj.us
NV		5 million every two years (so 2.5 mil/year), 21 million to general fund in 2018 above the 5 million to transportation.	tax.nv.gov
NY	Outside NYC	Expected to raise ~ $24 million but goes to general fund. There is proposed legislation to direct this to transit funding.	nyassembly.gov
NY	Within NYC	Too new for revenue reports.	

Note: Empty cells in the city column denote a statewide fee.

If cities and states are going to set fees specifically on TNCs, they should at least be differentiated between solo and pooled rides, large enough on solo rides to incentivize pooling, and the pooled tax costs for the shared vehicle (TPM_{pooled} *3) should be less than the tax on a solo ride (TPM_{solo}). While this recommendation seems illogical on its face, individuals make decisions based on the costs they incur but not others' costs, it makes sense when considering two principles: Pigouvian taxes and pooled incentivization.

First, if a regulator's aim is to decrease congestion and emissions from a given behavior, a commonly recommended policy is to tax the behavior based on the externality that it produces (e.g., a carbon tax equal to the costs on society that the carbon causes through climate change). This is commonly known as a Pigouvian tax. Thus, if a pooled vehicle has similar or lower externalities than a solo-ride then it should be taxed at an equal or lower rate than a solo-ride, if the regulator is concerned with the externality *not* revenue generation. Second, if pooled rides are significantly better than solo rides or SOV travel (which they would be if deadheading was reduced and/or taxed), then if regulators want to decrease congestion and GHGs, incentivizing pooled rides even more would be a straightforward way to accomplish those goals. An important caveat to this is what modes individuals would be shifting from if they were to instead use pooled rides. There is mixed evidence that TNCs pull from both transit and PVT, and future work should continue to investigate where the mode-shift is coming from. Similar to congestion pricing, increases in funding for public transit is likely warranted. Finally, there are also strong reasons to incentivize electric vehicles, but detailed analysis of these options is beyond the scope of this paper.

The issue with many of the current implementations of differentiated fees, see Figure 2, is that the total cost of the shared/pooled ride is actually higher than the solo ride. Furthermore, the fee per mile traveled, according to our assumptions, is also higher. While pooled rides are still less costly than a solo ride for each individual, the differences should be increased to further incentivize shared over solo rides. The minimum pricing logic should be similar to that of HOT and HOV lanes where the fee/cost per vehicle is lower when that vehicle contains more individuals. Simply put, the tax/fees *per vehicle* should be lower for pooled rides than shared rides. And as it stands, this is not the case in any of the tiered fee structures.



	Within NYC (Manhattan) NY	Chicago (Downtown) IL	Seattle WA	NJ	Chicago (Outside) IL	Portland OR	New Orleans LA	RI	Washington DC	CT	Baltimore MD	SD	HI	Outside NYC NY	MA	WY	San Francisco CA	NV	CA	Philadelphia PA	AL	SC
Solo Trip	$0.80	$0.62	$0.18	$0.13	$0.27	$0.12	$0.12	$0.16	$0.14	$0.08	$0.07	$0.11	$0.11	$0.11	$0.06	$0.10	$0.11	$0.08	$0.05	$0.06	$0.04	$0.04
Pooled Trip	$0.82	$0.77	$0.48	$0.48	$0.41	$0.32	$0.32	$0.23	$0.20	$0.18	$0.17	$0.15	$0.15	$0.15	$0.14	$0.14	$0.13	$0.11	$0.09	$0.07	$0.05	$0.05

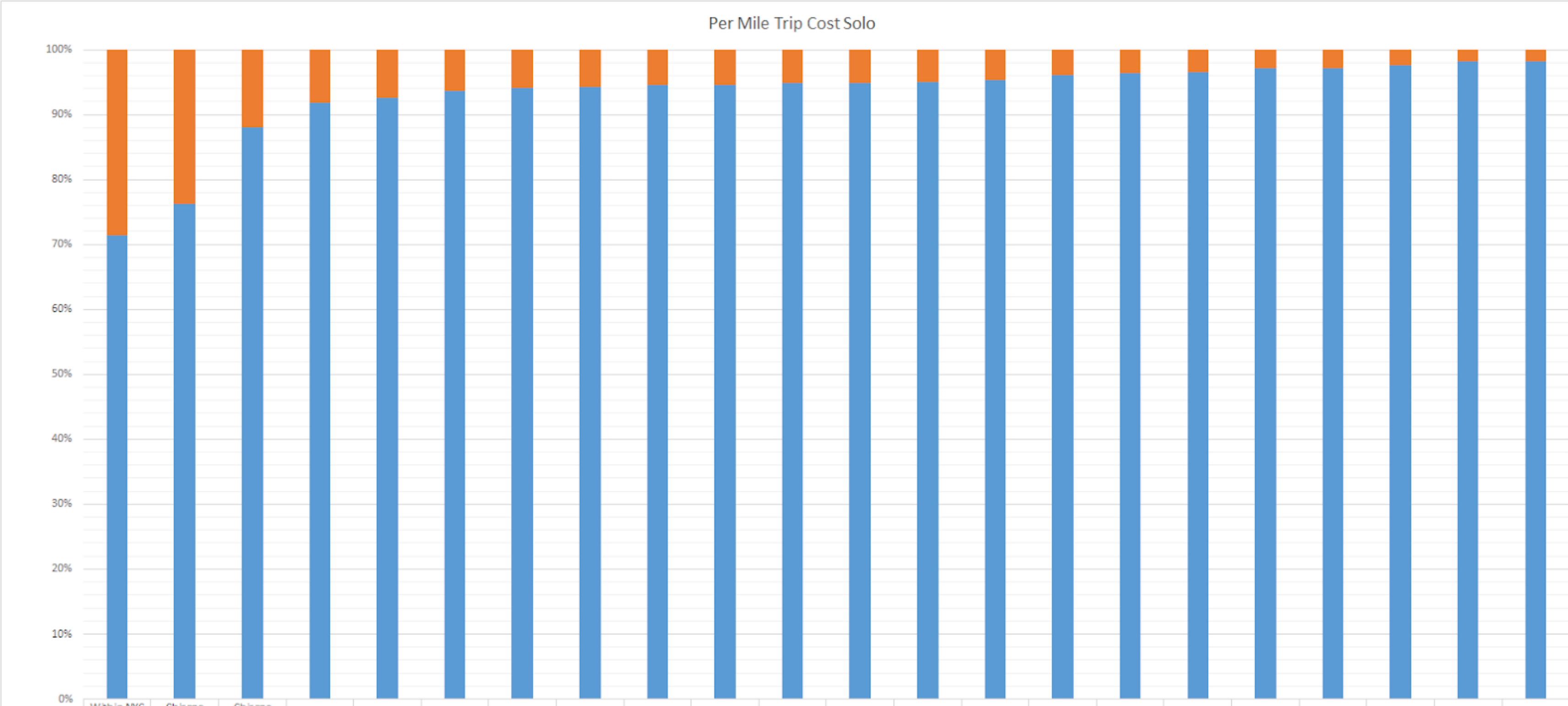
Figure 2. Per-Mile Tax Cost by Type of Trip and City/Sate

Table 5. Average TNC Taxes as a Percentage of Total Trip Cost.

Solo	Pooled
All	
6.97%	7.58%
Excluding NYC & Chicago	
4.33%	5.55%
Only NYC & Chicago	
22.06%	18.20%

Note: State and Federal gas taxes are included in this calculation.

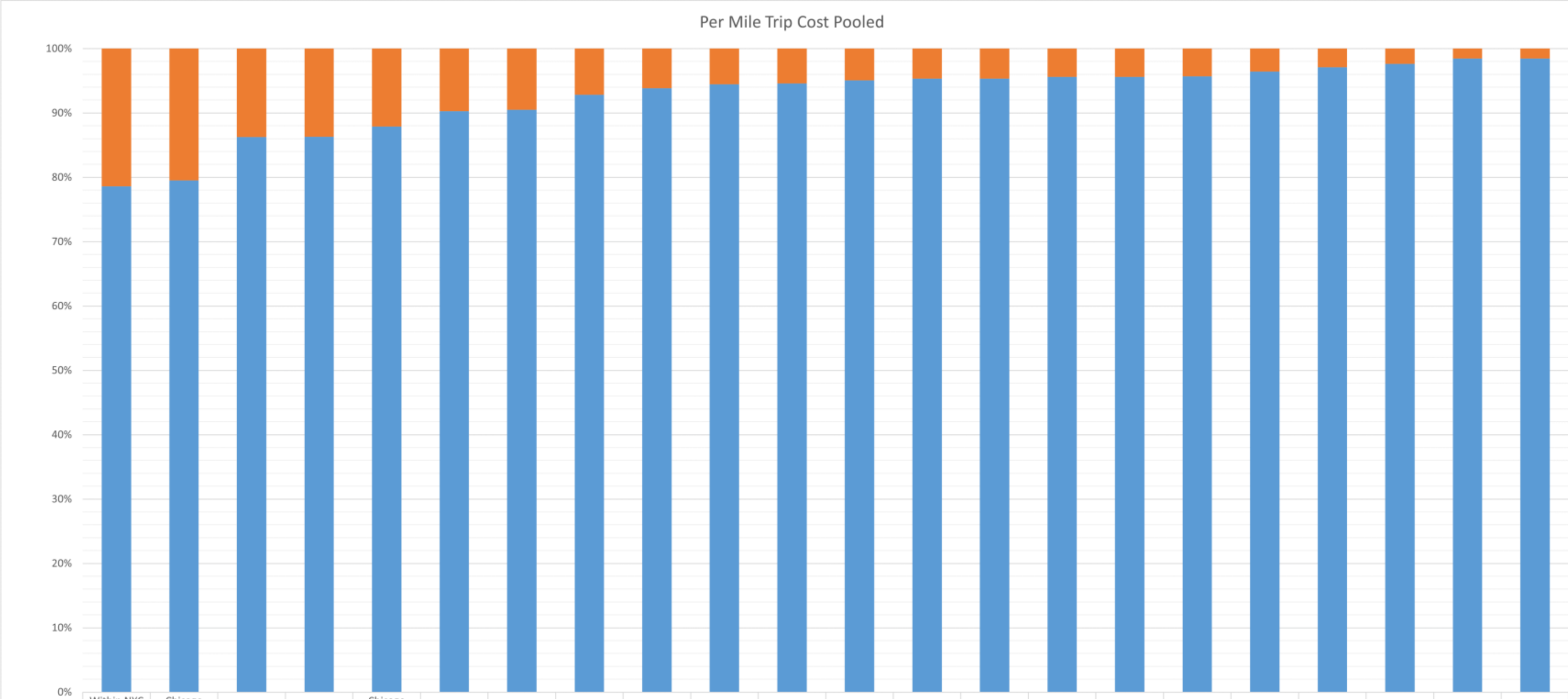
Finally, the current fees are likely not large enough to shift behavior significantly (see Table 5). According to Figure 3, the fees only comprise an average of 6.97% and 7.58% of the total cost of travel for solo and pooled rides, respectively. If we remove the outliers of NYC and Chicago, they only comprise 4.33% and 5.55% and if we only analyze the outliers, they comprise a much larger 22.06% and 18.20%, respectively. One disappointing feature is that the fees are a larger percentage of the total cost in all cases excluding NYC and Chicago, implying that most TNC fees are disincentivizing pooled travel more than they are solo rides. Overall, this highlights the need for solo fees to be much larger and pooled fees to be much lower than current levels (especially outside of NYC and Chicago) if they are to incentivize pooled rides among riders who are less price sensitive than the current riders who already choose to pool.



	Within NYC (Manhattan) NY	Chicago (Downtown) IL	Chicago (Outside) IL	Seattle WA	RI	Washington DC	NJ	Portland OR	New Orleans LA	San Francisco CA	SD
TNC Fee	$0.80	$0.62	$0.27	$0.18	$0.16	$0.14	$0.13	$0.12	$0.12	$0.11	$0.11
TNC Fare	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00

	HI	Outside NYC NY	WY	NV	CT	Baltimore MD	Philadelphia PA	MA	CA	AL	SC
TNC Fee	$0.11	$0.11	$0.10	$0.08	$0.08	$0.07	$0.06	$0.06	$0.05	$0.04	$0.04
TNC Fare	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00

NCST



	Within NYC (Manhattan)	Chicago (Downtown)	Seattle		Chicago (Outside)	Portland	New Orleans		Washington		Baltimore			Outside NYC			San Francisco			Philadelphia		
	NY	IL	WA	NJ	IL	OR	LA	RI	DC	CT	MD	SD	HI	NY	MA	WY	CA	NV	CA	PA	AL	SC
TNC Fee	$0.27	$0.26	$0.16	$0.16	$0.14	$0.11	$0.11	$0.08	$0.07	$0.06	$0.06	$0.05	$0.05	$0.05	$0.05	$0.05	$0.04	$0.04	$0.03	$0.02	$0.02	$0.02
TNC Fare	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00

Figure 3. Fees as a Percentage of Total Ride Cost by Ride Type and City/State

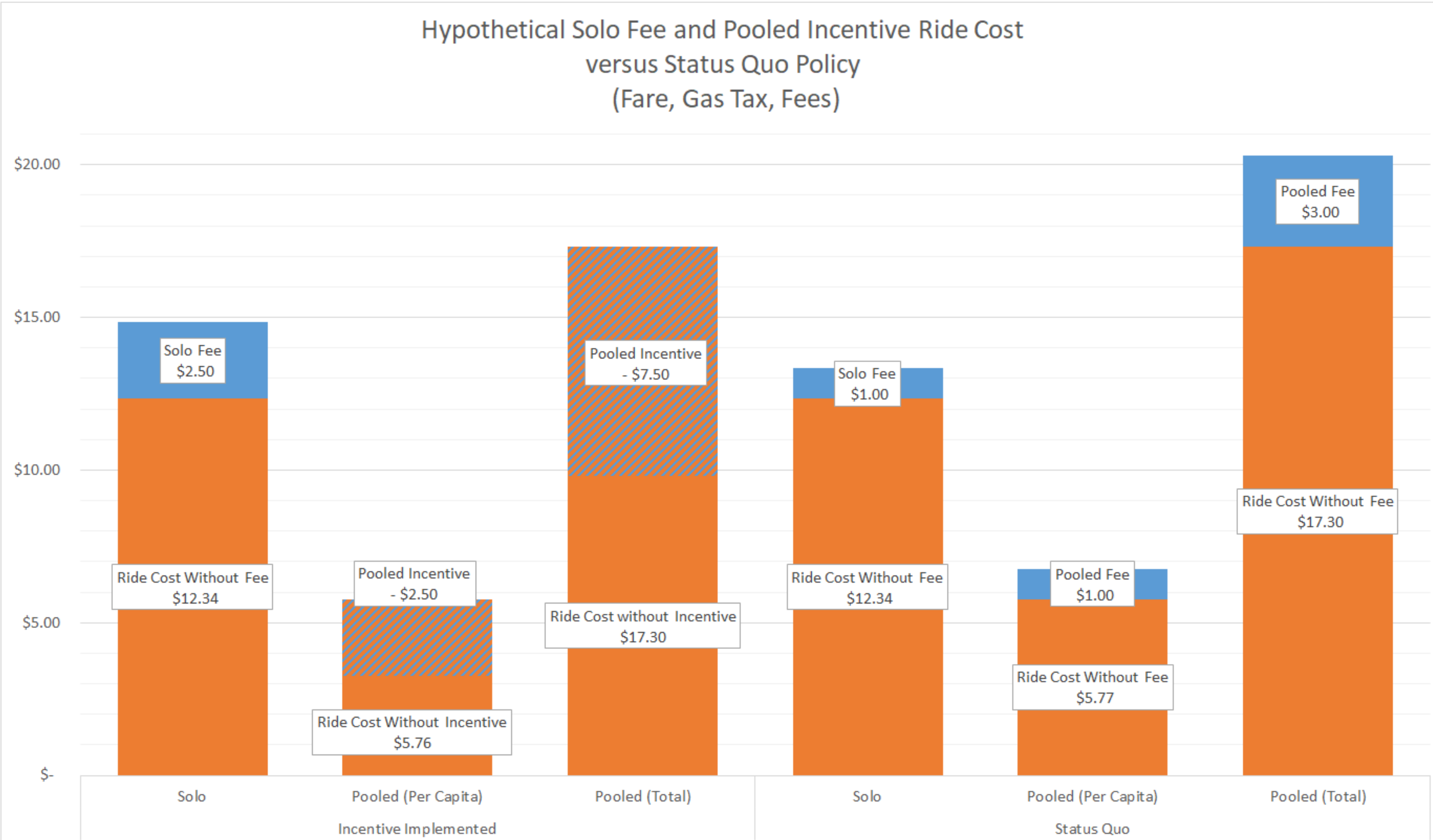
In sum, in order to be effective in reducing congestion and emissions, TNC fee structures should meet these three criteria:

1) Fees should differentiate between shared and solo rides, namely they should charge significantly lower fees on shared riders and significantly larger fees on solo riders. Importantly, the fees charged per-vehicle should be equal to or less than charged on solo rides.
2) Fees should be large enough to motivate individuals to use shared rides or public transit. These should be determined by rigorous travel demand modeling. However, fees should not be so high on shared rides as to shift individuals toward PVT in the longer term.
3) Fees should directly target deadheading, as this portion of TNC rides constitutes, at a lower bound, ~41% of VMT *(6)*.

While any effective TNC pricing strategy should meet these criteria, in this paper we propose a possible cross-subsidy structure which goes further on criteria one and two. While out of the scope of this paper, important work has focused on how cities and states, as well as TNC companies, can reduce deadheading and this work should be heeded for criterion 3, see Kontou et al., Wang et al., and Henao & Marshall *(23–25)*. For example, Henao & Marshall recommend a per-mile fees that start at 0 passengers and decrease as more passengers are in the vehicle. While working to decrease deadheading specifically, it also incentivizes pooled rides above and beyond the fees that already exist for solo and pooled rides. Our ideal recommendation includes this policy above and beyond the cross-subsidy recommended below.

For the first two criteria, we analyze a scenario where fees for solo rides are increased significantly and that the revenue raised from solo rides be used to lower the cost of shared rides. This strategy would meet our first two criteria by both differentiating significantly between solo and pooled rides and ensuring that the fees are large enough to induce pooling and decrease solo rides. Inducing shared rides is exceedingly critical given recent research that suggests that there are large barriers to doing just that (*26*), and that these barriers may lead riders to be reluctant to use pooling (*27*). One other advantage of incentivizing pooled rides in a market is that the overall efficiency of TNC use (as measured by low wait times, shorter detours, and higher average occupancy) should increase with the prevalence of pooling. This is because the more people who pool, the more matches can be made and the more trip paths can be aligned. Providing these incentives can also make on-demand ride hailing financially feasible for a much wider section of a community and can in principle improve transportation equity and access (as long as care is taken to increase synergy with transit simultaneously).

A hypothetical example of this strategy, using California as a baseline, is presented in Figure 4. While relatively simple, it highlights the basic concept of a cross-subsidy. Specifically, it reduces the costs of shared rides by a significant amount, while increasing the fee for solo rides to a much larger extent. In principle, this should allow governments to keep the same, or similar, revenue from a flat fee, but also increase the appeal of shared rides. This program could either be revenue neutral or slightly positive by linking the pooled incentive to the revenue generated by the solo fee. For example, the program could use previous data to forecast solo and pooled rides for the coming period and set the incentive as an adjusted quotient of solo fee revenue versus expected pooled rides. In the simplest example, this would be solo fee revenue divided by pooled ridership (e.g., ($2.5 * 100,000 solo riders)/100,000 pooled riders = $2.50). However, this could be adjusted to ensure a positive revenue stream. Overall, this policy should decrease congestion from TNCs by shifting solo to pooled rides, and possibly lead individuals to mode-switch from private vehicle travel to shared rides.



Note: This hypothetical program is revenue neutral and assumes a $2.50 solo fee and a 1:1 ratio of solo and pooled riders.

Figure 4. Cost Differences in Solo vs. Pooled Rides Per-Capita and Total 3-Person Cost.

Conclusion

The growth of TNC use in cities and recent research arguing that TNCs can increase traffic and emissions has led many cities and states to add fees to TNC rides. However, our analysis of the fees in place reveals that they are not generally aligned with these stated goals and may in fact be designed more for revenue generation than to actually reduce emissions and congestion. Effective transportation pricing policy should align the price that travelers see with the impact of their choices. For TNC policy specifically, this could be accomplished with a significant cross-subsidy, charged to solo rides and provided as an incentive to pooled rides. This should also be done in the context of overall pricing policy to appropriately price all travel and specific policies that address deadheading specifically. Policies that meet our three criteria should be well positioned to accomplish goals related to decreasing congestion and GHGs. Finally, while our analysis is relatively limited and we make general, rather than specific, recommendations, the principles that inform these recommendations rest strongly on rigorous previous research and well-accepted principles of transportation research and regulation. We hope that this work provides a launch board for future research to deeply assess the potential outcomes of these policies.

References

1. Brinklow A. Here's Every Study of Every Terrible Thing Lyft and Uber do to SF Traffic [Internet]. Curbed San Francisco. 2019 [cited 31 July 2020]. Available from: https://sf.curbed.com/2019/8/21/20826611/tnc-uber-lyft-san-francisco-traffic-studies-fehr-peers
2. San Francisco County Transportation Authority. TNCs & Congestion. 2018.
3. Hou Y, Garikapati V, Weigl D, Henao A, Moniot M, Sperling J. Factors Influencing Willingness to Pool in Ride-Hailing Trips. Transportation Research Record. 2020 May 1:0361198120915886.
4. Slowik P, Wappelhorst S, Lutsey N. How Can Taxes and Fees on Ride-Hailing Fleets Steer Them to Electrify? [Internet]. The International Council on Clean Transportation; 2020. Available from: https://theicct.org/publications/taxes-and-fees-electrify-ridehailing
5. Henao A, Marshall WE. The Impact of Ride Hailing on Parking (and Vice Versa). Journal of Transport and Land Use. 2019 Jan 1; 12 (1): 127-47.
6. Henao A, Marshall WE. The Impact of Ride-Hailing on Vehicle Miles Traveled. Transportation. 2019 Dec 1; 46 (6): 2173-94.
7. Taylor BD, Chin R, Crotty M, Dill J, Hoel LA, Manville M, Polzin S, Schaller B, Shaheen S, Sperling D, Zafar M. Between Public and Private Mobility: Examining the Rise of Technology-Enabled Transportation Services. Special Report. 2015; 319.
8. Compostella J, Fulton LM, De Kleine R, Kim HC, Wallington TJ. Near-(2020) and Long-Term (2030–2035) Costs of Automated, Electrified, and Shared Mobility in the United States. Transport Policy. 2020 Jan 1; 85: 54-66.
9. Schrank D, Eisele B, Lomax T. 2019 Urban Mobility Report [Internet]. Texas A&M Transportation Institute; 2019. Available from: https://static.tti.tamu.edu/tti.tamu.edu/documents/mobility-report-2019.pdf
10. Environmental Protection Agency. Fast Facts: U.S. Transportation Sector Greenhouse Gas Emissions 1990–2018. 2019. Available from: nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100ZK4P.pdf
11. Balding M, Whinery T, Leshner E, Womeldorff E. Estimated TNC Share of VMT in Six US Metropolitan Regions [Internet]. Fehr & Peers; 2020. Available from: https://www.fehrandpeers.com/what-are-tncs-share-of-vmt/
12. Circella G, Lee Y, Alemi F. Exploring the Relationships Among Travel Multimodality, Driving Behavior, Use of Ridehailing and Energy Consumption. 2019.
13. Graehler M, Mucci RA, Erhardt GD. Understanding the Recent Transit Ridership Decline in Major US Cities: Service Cuts or Emerging Modes. In Transportation Research Board 98th Annual Meeting, Washington, DC, January 2019 Jan 13.
14. Hall JD, Palsson C, Price J. Is Uber a Substitute or Complement for Public Transit?. Journal of Urban Economics. 2018 Nov 1; 108: 36-50.

15. Massachusetts Department of Transportation. Congestion in the Commonwealth. 2019.

16. Tri-State Transportation Campaign. Road Pricing in London, Stockholm and Singapore: A Way Forward for New York City [Internet]. 2018. Available from: https://nyc.streetsblog.org/wp-content/uploads/2018/01/TSTC_A_Way_Forward_CPreport_1.4.18_medium.pdf

17. Spivack C. Congestion Pricing Delayed as New Car Owners Threaten to Slow New York to a Crawl [Internet]. 2020 [cited 20 Jan 2021]. Available from: https://ny.curbed.com/2020/7/15/21324020/congestion-pricing-delayed-mta-cars-slow-new-york-city

18. Mollie CD, Pellaton P, White B. Equitable Congestion Pricing. Institute of Transportation Studies, UC Davis; 2020 Dec 1.

19. Domonoske C. City Dwellers Don't Like the Idea of Congestion Pricing — But They Get Over It [Internet]. National Public Radio. 2019 [cited 31 July 2020]. Available from: https://www.npr.org/2019/05/07/720805841/city-dwellers-dont-like-the-idea-of-congestion-pricing-but-they-get-over-it

20. Sperling D. Three Revolutions: Steering Automated, Shared, and Electric Vehicles to a Better Future. Island Press; 2018.

21. Hawkins A. Lyft's New "Most Affordable Ride" Involves a Lot of Extra Waiting and Walking [Internet]. The Verge. 2019 [cited 31 July 2020]. Available from: https://www.theverge.com/2019/2/21/18233440/lyft-shared-saver-carpool-cheapest-fares

22. Uber Estimate - Get a Price Estimate in Your City [Internet]. Uber. 2020 [cited 31 July 2020]. Available from: https://www.uber.com/us/en/price-estimate/

23. Kontou E, Garikapati V, Hou Y. Reducing Ridesourcing Empty Vehicle Travel with Future Travel Demand Prediction. Transportation Research Part C: Emerging Technologies. 2020 Dec 1;121: 102826.

24. Wang C, Hou Y, Barth M. Data-Driven Multi-step Demand Prediction for Ride-Hailing Services Using Convolutional Neural Network. In Science and Information Conference 2019 Apr 25 (pp. 11-22). Springer, Cham.

25. Henao A, Marshall WE. An Analysis of the Individual Economics of Ride-Hailing Drivers. Transportation Research Part A: Policy and Practice. 2019 Dec 1; 130: 440-51.

26. Sanguinetti, A., Kurani, K., Ferguson, B. Is it OK to Get in a Car with a Stranger? Risks and Benefits of Ride-Pooling in Shared Automated Vehicles. Institute of Transportation Studies University of California, Davis. 2019. Available from: https://escholarship.org/content/qt1cb6n6r9/qt1cb6n6r9.pdf?t=pppbz3.

27. Bansal P, Sinha A, Dua R, Daziano RA. Eliciting Preferences of TNC Users and Drivers: Evidence from the United States. Travel Behaviour and Society. 2020 Jul 1; 20: 225-36.

28. Sabatini J. Tax on Uber, Lyft rides heading to voters [Internet]. 2019 [cited 31 July 2020]. Available from: https://www.sfexaminer.com/the-city/tax-on-uber-lyft-rides-heading-to-voters/
29. Kim SJ, Puentes R. Taxing New Mobility Services: What's Right? What's Next? Eno Center for Transportation. 2018 Jul.

Data Management

Products of Research

Transportation Network Company taxes/fees were collected from government websites and archives after first being identified either by those same websites or news articles announcing the implementation of a fee/tax. The city and/or state were noted and the type of fee, either flat or percentage based, along with whether the fee system differentiated between solo and pooled vehicles were recorded.

Data Format and Content

The two files, the .csv and .xlsx, contain all of the data and calculations used in this paper.

Data Access and Sharing

The dataset used in this work is available in both .csv and .xlsx formats through the Dryad data repository: https://doi.org/10.25338/B82D07

Reuse and Redistribution

This dataset is available at the following link and should be cited as:

> Fuller, Sam; Brown, Austin (2020), Transportation Network Company (TNC) taxes/fees by state/city in the United States, Dryad, Dataset, https://doi.org/10.25338/B82D07

APPENDIX: Detailed Links/Citations of Stated Fee Purposes

Table A1. List of Fees and Stated Purpose/Goal

State	City	Stated Purpose of Policy
AL	NA	Cover costs of regulation through the Public Service Commission. Raise revenue for local municipalities. Link
CA	NA	Fund the "TNC Access for All Fund" which is then redisbursed to TNCs to implement services that increase access for disabled persons. This disagrees with ENO, but it is stated here: link https://www.cpuc.ca.gov/General.aspx?id=6442459754
CA	San Francisco	"The goals are very simple. This is a traffic congestion mitigation tax."--Supervisor Aaron Peskin
CT	NA	No found purpose, goes to general fund. ENO Brief
DC	Washington, DC	D.C. council members argued that TNCs "contribute to traffic congestion, add wear and tear to the District's roads, and there is evidence that they draw people away from public transit." Washington Post
HI	NA	General excise tax, no intended purpose. Link
IL	Chicago	$.60 to general fund, .02 to Business Affairs and Consumer Protection, and $.10 to vehicle accessibility fund. Link Keep finding mentions that it's being used to fix the L. Link 1, Link 2 New proposal is said to decrease congestion and incentivize pooling.
LA	New Orleans	For funding regulation and enforcement of TNCs. Link
MA	NA	Earmarked for transportation. Link New Fee would also be earmarked for MBTA. (70% to MBTA, 30% to local towns) Link
MD	Baltimore	If assessed, must be used to increase local transportation funding. Link
NJ	NA	http://leg.wa.gov/JTC/Documents/Final%20Studies/TNC_PolicyGuideFinal.pdf
NV	NA	$5 million to highway fund per 2-year period, above that goes into general fund. Link
NY	Outside NYC	4% Not earmarked for transportation, goes to general fund. Link 2.5% earmarked for the black car fund. Link
NY	Within NYC	Congestion and fund subway repairs. Link for repairs (should change)
OR	Portland	Only earmarked for regulation and enforcement. Link

State	City	Stated Purpose of Policy
PA	Philadelphia	Raise money for public schools and the regulation of TNCs Link
RI	NA	Not earmarked, goes to general fund. Link
SC	NA	Not earmarked, no stated purpose. Link
SD	NA	Not earmarked, goes to general fund. Link
WA	Seattle	$.14 for regulation and enforcement, $.10 for accessibility fund. Link Additional revenue from $.51 increase will go to affordable housing and a streetcar system. Some will also go to a "Driver Resolution Center" Link
WY	NA	Not earmarked, goes to general fund and local governments. Link